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AUTHOR Breneman, David W.; Kleinman, Judith D.
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ABSTRACT

Trends in graduate enrollment, graduate student financial support, graduate degree production, and the labor market for new Ph.D. economists are examined. Surveys conducted by the National Science Foundation were the principal source of information, supplemented by data from the National Center for Education Statistics and a few private survey sources. Graduate enrollments in economics have been stable from 1975 through 1979, but increased by more than 10% between 1979 and 1981. Regarding student financial support, there is a growing reliance on the institution's own and state-provided funds and an increased dependence on self-support, family support, and debt. From 1960 through the early 1970s, there was a rapid rise in the number of M.A. and Ph.D. degrees awarded. Degree production for both degrees peaked in 1973, with the number of M.A. degrees drifting steadily downward. The pattern of Ph.D. production has been stable since 1970. New Ph.D. economists are finding jobs, but there is a trend toward the pursuit of nonacademic positions. (RM)

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Economic Trends in Graduate Education in Economics

by

David W. Breneman*

Judith D. Kleinman

Prepared for a session on Graduate Education in Economics
and
the International Transfer of Knowledge

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* The authors are Senior Fellow and Research Assistant respectively at
the Brookings Institution, Washington, D.C.

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Our contribution to this session on the international dimensions of graduate education in economics is to provide statistical indicators of trends in graduate education and in the labor market for economists in the United States. Wherever possible we note the significance of foreign students, but we leave detailed information on them to Wyn Owen and Larry Cross. Our paper is intended to provide a backdrop for the more focused papers concerned with graduate training of foreign students in economics.

At the outset we should also note that we did not undertake this research with a particular point of view or set of hypotheses to develop and test. Neither author has been closely affiliated with a graduate department of economics in recent years, and we did not conduct campus visits or interviews in the course of this study. Instead, we have tried to see what story might be told by pulling together various statistical series that report on trends in graduate enrollments, financial support for students, advanced degrees conferred, and job placement upon graduation. In some instances, the data available allowed us to go back two decades or more, while in other cases, we were limited to data for the 1970s. Surveys conducted by the National Science Foundation (NSF) were our principal source of information, supplemented by data from the National Center for Education Statistics (NCES) and a few private survey sources.

The period covered has seen a great many changes in the status of graduate education generally, and in some fields, such as physics and electrical engineering, enrollments and resources for student support as well as labor market prospects for graduates have swung dramatically from boom to bust and back again. What is most noteworthy in the data presented below on economics is the relative stability of the statistical time series. Unlike the case of many fields, where the challenge to the economist is to understand and interpret oscillating patterns, the challenge in our own discipline is to explain the relative stability that one observes.

Trends in Graduate Enrollment

Table 1 presents data on total graduate enrollments in economics in United States universities for the years 1960 to 1981. Remarkably, we cannot present a single, consistent time series of data on graduate enrollments by field because NCES stopped collecting such information in 1976. NSF has collected data on graduate enrollments for scientific fields in its domain since 1974, but as Table 1 makes clear, the two series differ significantly in the two years that overlap, with the NSF figures nearly 20 percent higher. Lengthy conversations with staff at NCES and NSF failed to reveal the source of the discrepancy; both agencies claim to have used the same definition of economics and to have surveyed the same group of departments. A possible explanation may be that NCES included only graduate students currently enrolled for credit, while NSF data may include students at the dissertation level

Table 1: Total Enrollment in Graduate Economics Programs

	NCES	NSF
1960	5,076	
1961	5,662	
1962	6,429	
1963	7,049	
1964	8,141	
1965	3,600	
1966	9,005	
1967	10,494	
1968	10,585	
1969	10,891	
1970	11,507	
1971	10,286	
1972	10,146	
1973	9,992	
1974	9,939	
1975	10,075	11,995
1976	9,892	11,829
1977		11,983
1978		12,012
1979		12,040
1980		13,067
1981 ^a		13,271

Source: National Center for Education Statistics (NCES), Enrollment for Advanced Degrees, various years and National Science Foundation (NSF), Graduate Enrollment and Support, various years.

^a preliminary

not currently enrolled for credit. Whatever the explanation, it is certainly an unsatisfactory situation not to have consistently reported data on graduate enrollments in the various academic disciplines.

The NCES data show that graduate enrollments in economics more than doubled between 1960 and 1967, peaked in 1970 at roughly 11,500, and drifted downward thereafter, declining by 14 percent from the peak year. The NSF data show enrollments to have been essentially stable from 1975 through 1979, but increasing by more than 10 percent between 1979 and 1981. In general, however, enrollment fluctuations since 1970 have not been large, with the most recent data showing an upturn -- hardly evidence of a field in decline. If one believes that graduate enrollments reflect the current state of the labor market, then one would expect to find the labor market for beginning economists to have been relatively strong in recent years, an issue we examine later.

Table 2 draws on both NCES and NSF data to depict the distribution of graduate enrollments by sex in the years since 1970. As has been true in many academic fields, there has been a steady increase in the percentage of women enrolled in graduate economic programs, the figure rising from 11.5 percent in 1970 to 26.4 percent by 1981. Although the two data series make interpretation difficult, it would appear that women accounted for much of the enrollment increase that occurred during the 1970s.

Table 2: Distribution of ENROLLMENT BY SEX, 1974 - 1981

		<u>Total Number</u>		<u>Percent of Total</u>	
		Male	Female	Male	Female
NCES	1970	10,181	1,326	88.5	11.5
	1971	8,970	1,316	87.2	12.8
	1972	8,728	1,418	86.0	14.0
	1973	8,519	1,473	85.3	14.7
	1974	8,390	1,549	84.4	15.6
	1975	8,373	1,701	83.1	16.9
	1976	8,114	1,778	82.0	18.0
NSF	1977	9,707	2,276	81.0	19.0
	1978	n.a.	n.a.	n.a.	
	1979	9,450	2,590	78.5	21.5
	1980	10,091	2,976	76.1	23.9
	1981 ^a	10,102	3,169	73.6	26.4

Source: NSF, Graduate Enrollment and Support, various years.^a preliminary

Neither NCES nor the Institute for International Education report data on graduate enrollment of foreign students by discipline, leaving NSF as the only source of such information. Table 3 presents both the number of foreign students and their percent of total graduate enrollments in economics for the years 1974 to 1981. Over this period, the number of foreign students increased sharply (72 percent) and steadily, accounting for 20.5 percent of graduate economics enrollments in 1974 and 28.5 percent in 1981. Increased enrollment of foreign students has clearly been an important factor in keeping graduate enrollments in economics up. Among all social science fields, economics enrolls by far the highest percentage of foreign students, accounting for more than one-third of all foreign students enrolled in the social sciences each year since 1974. In fact, of all scientific fields, only chemistry and electrical engineering come close to rivaling economics in the share of foreign students enrolled.

Finally, Table 4 presents data from NSF on first year graduate enrollments in economics for the years 1974 through 1981. While the numbers have fluctuated slightly over this period, the overall pattern is one of relative stability. Forecasts of a sharp drop-off in graduate economics enrollments in response to a declining academic labor market have not yet been proved accurate.¹ The increased

1. See W.L. Hansen, et al., "Forecasting the Market for New Ph.D. Economists," American Economic Review (vol. 70, no. 1), March 1980, pp. 49-63.

Table 3: Foreign Student Enrollment in Economics Graduate Programs
(Doctoral-granting Institutions)

	Total Number	Percent of Total Economics Graduate Students
1974	2,047	20.5
1975	2,221	20.3
1976	2,479	22.8
1977	2,668	24.2
1978	n.a.	n.a.
1979	3,004	26.8
1980	3,342	27.5
1981 ^a	3,517	28.5

Source: NSF, Graduate Enrollment and Support, various years.

^a preliminary

Table 4: First Year Enrollment in Economics Graduate Programs, 1974-1981
(Doctoral-granting Institutions)

1974	2,716
1975	3,040
1976	2,886
1977	2,950
1978	2,858
1979	2,582
1980	2,840
1981 ^a	2,920

Source: NSF, Graduate Enrollment and Support, various years.

^a preliminary

enrollment of women and foreign students would appear to be more than offsetting the drop in enrollments of male U.S. citizens.

Trends in Graduate Student Financial Support

National data on how graduate students finance their advanced education are limited to the information collected by NSF through the Graduate Science Student Support survey. Annual surveys are sent to department chairmen, who are asked to indicate the principal type and source of support for each graduate student. The dollar amount of aid is not collected, and each student is reported under only one category of support even though the student may receive aid from multiple sources. Table 5 presents data on the principal type of support received by graduate economics students for the years 1974 to 1981, while Table 6 presents the data by source of support for the same years.

Each type of support identified in Table 5 exhibits a distinct trend over this period. Fellowships and traineeships have declined in number by 27 percent from the peak year in 1975; research assistantships have remained essentially unchanged in number; teaching assistantships have increased steadily and by 49 percent overall; and other forms of support have increased in number and importance, rising by 51 percent overall. The typical graduate economics student in 1981 apparently worked and borrowed more to finance graduate education than did his counterpart in 1974.

Table 5. Type of Graduate Student Support, FY 1974-1981
(Doctoral-granting Institutions)

Type/Number and Percent of students	1974	1975	1976	1977	1978	1979	1980	1981 ^a
Fellowships & traineeships	1,411	1,547	1,462	1,461	n.a.	1,370	1,366	1,125
% of total	19.9	19.6	19.0	18.4	n.a.	17.1	15.4	12.5
Research assistants	1,162	1,148	1,176	1,151	n.a.	1,158	1,164	1,131
% of total	16.4	14.5	15.3	14.5	n.a.	14.4	13.1	12.5
Teaching assistants	1,788	1,877	1,970	2,032	n.a.	2,139	2,447	2,663
% of total	25.3	23.7	25.6	25.6	n.a.	26.7	27.6	29.5
Other	2,713	3,341	3,090	3,302	n.a.	3,355	3,885	4,110
% of total	38.4	42.2	40.1	41.6	n.a.	41.8	43.8	45.5

Source: NSF, Graduate Enrollment and Support, various years.

n.a. Not Available

^a preliminary

Table 6: Source of Graduate Student Support, 1974-1981
(Doctoral-granting Institutions)

Source/Number & Percent of students	1974	1975	1976	1977	1978	1979	1980	1981 ^a
Federal Government	695	640	536	586	514	534	587	431
% of total	9.8	8.1	7.0	7.4	6.4	6.7	6.6	4.8
Institutions & State Government	3,307	3,508	3,566	3,572	3,627	3,802	4,063	4,339
% of total	46.7	44.3	46.3	45.0	45.0	47.4	45.8	48.1
Self, loans, family	2,328	2,954	2,620	2,876	2,989	2,697	3,238	3,230
% of total	32.9	37.3	34.0	36.2	37.0	33.6	36.5	35.8
Other	744	811	976	912	938	989	974	1,029
% of total	10.5	10.2	12.7	11.5	11.6	12.3	11.0	11.4

Source: NSF, Graduate Enrollment and Support, various years.

^a Preliminary

Turning to the source of support, Table 6 shows the declining importance of direct Federal support,² the growing reliance on the institution's own and state-provided funds, and the increased dependence on self support, family support, and debt. Despite the shifting patterns of both type and source of support documented in these tables, it is still noteworthy that the percentage of students who are self-supporting only increased from 33 percent to 37 percent between 1974 and 1981, which may help to explain why graduate enrollments did not decline. Sharply increasing undergraduate enrollments in economics courses apparently helped to justify an increase in teaching assistantships, and the universities appear to have drawn on internal resources for increased financial aid. Graduate students in economics were never as dependent on federal support as students in the physical and biological sciences, a fact that may help to explain the greater stability of enrollments in economics programs.

Trends in Graduate Degree Production

Table 7 presents data on M.A. and Ph.D. degrees awarded in economics from 1960 through 1981, together with the percent awarded in each year to women. The sharp enrollment increases in the 1960s are reflected in the rapid rise in the number of both M.A. and

2. Students who borrow under the Guaranteed Student Loan program or the National Direct Student Loan program receive federal interest subsidies not included in this table as federal support.

Table 7: Graduate Degrees Conferred in Economics, 1960-1981

	<u>Master's Degree</u>		<u>Ph.D.</u>	
	Total	Percent Female	Total	Percent Female
1960	708	8.2	352	4.0
1961	820	9.2	413	3.9
1962	853	10.4	418	3.8
1963	1,029	8.0	450	5.3
1964	1,111	8.8	527	4.0
1965	1,268	11.8	560	3.8
1966	1,528	11.1	627	4.3
1967	1,778	9.4	691	5.2
1968	1,921	10.3	745	4.7
1969	2,113	11.5	706	6.2
1970	1,990	12.4	853	6.1
1971	1,997	13.1	821	6.7
1972	2,225	12.8	895	6.5
1973	2,231	12.7	938	6.1
1974	2,145	14.1	853	8.7
1975	2,133	15.2	894	9.6
1976	2,093	16.0	884	10.5
1977	2,166	17.7	838	8.7
1978	1,997	19.8	801	11.6
1979	1,960	20.0	802	13.1
1980	1,823	21.0	767	13.4
1981	N.A.	N.A.	824	12.3

Source: NSF, Science and Engineering Degrees: 1950-80, for Master's degrees and NAS/NRC, Doctorate Records File for Ph.D.s.

n.a. Not Available

Ph.D. degrees produced during the late 1960s and early 1970s. Degree production peaked for both degrees in 1973, with the number of Master's degrees drifting steadily downward for a drop of roughly 18 percent by 1981, while the course of Ph.D. production, albeit generally declining, has fluctuated in recent years. If one looks at Ph.D. production since 1970, however, the general pattern is one of rough stability about an average of 847 degrees awarded per year. Over the 21 year period, the percentage of M.A. degrees going to women increased 2 1/2 times, while the percentage of Ph.D. degrees awarded to women tripled. Based on enrollment statistics by sex reported earlier, one would expect the proportion of doctorates going to women to increase to 25 percent or more by the mid to late 1980s.

Table 8 reports the share of doctorates in economics awarded to foreign students since 1970. A modest upward trend in the proportion of foreign doctorates is noticeable, with roughly one-third of all Ph.D. degrees in economics going to foreign students in recent years. One would expect this figure to track with foreign student enrollments, which have been close to 30 percent in recent years.

Since 1977, the National Academy of Sciences/National Research Council (NAS/NRC) has collected racial and ethnic data for all new Ph.D.s as part of an ongoing survey. Table 9 presents that information for economics, all social sciences, and all doctorates regardless of field. Blacks and Hispanics earn considerably smaller percentages of Ph.D.s in economics than they do in all fields combined, while Asians

Table 8: Citizenship of Economics Ph.D. Recipients
Percent

	U.S.	Foreign	Unknown
1970	72.0	26.1	1.9
1971	72.5	25.5	2.0
1972	72.4	25.3	2.3
1973	69.3	28.5	2.2
1974	69.4	28.6	2.0
1975	71.7	25.6	2.7
1976	70.0	28.2	1.8
1977	67.3	30.5	2.2
1978	66.3	29.7	4.0
1979	65.8	31.5	2.7
1980	65.4	31.9	2.7
1981	64.1	31.9	4.0

Source: NAS/NRC, Doctorate Records File.

Table 9: Ethnic Distribution of Economics Ph.D. Recipients
 Percents

	<u>Of total economists</u>			<u>Of total social scientists</u>			<u>Of all Ph.D.s</u>		
	Black	Asian	Hispanic	Black	Asian	Hispanic	Black	Asian	Hispanic
1977	2.4	2.6	0.4	3.4	1.6	1.3	3.7	2.9	1.5
1978	0.7	4.2	0.9	3.3	1.8	1.8	3.6	3.3	1.7
1979	1.1	3.6	1.2	3.5	2.0	1.7	3.5	3.5	1.7
1980	1.7	5.1	1.3	3.6	2.3	1.7	3.5	3.5	1.6
1981	1.9	4.2	1.5	3.4	2.1	1.9	3.5	3.4	1.7

Source: Doctorate Records File.

NRC first began reporting this data in 1977

earn a somewhat higher proportion of doctorates in economics than they do in all fields combined. These data probably reflect the differences in developed mathematical skills found among these minority groups.

Trends in the Labor Market for New Ph.D. Economists

During the 1970s, and thus far into the 1980s, the number of new Ph.D.s in economics entering the labor market directly after graduation has remained fairly stable. In Table 10, the number entering the labor market is calculated as the product of total doctoral recipients and the percentage of those entering the labor market directly rather than pursuing post-doctoral study or other activities. Neither the number of doctoral recipients, nor the percentage of those entering the labor market, has varied greatly over the decade. Given that first year graduate enrollments in economics have not declined in recent years, it seems likely that the number of new Ph.D.s entering the market will continue at roughly current levels through most of the 1980s.

One rough index of softness in the labor market for new Ph.D.s is the percentage of graduates actively seeking work at receipt of the degree but having no specific employment prospects at that time. Table 11 tracks that percentage from 1969 to 1981, showing evidence of market weakening in the mid 1970s, but a decided improvement since 1978. We can only speculate about the trends displayed, but it appears that an increasing number of the graduates who in the past would have sought academic employment choose now to pursue non-academic positions. In any event, these data do not support a view of a steadily deteriorating

Table 10. Number of New Ph.D. Economists Entering Labor Market, 1970-1981

	Degrees Conferred	Percent Planning Employment	Total Entering Labor Force
1970	853	90.9	775
1971	821	90.7	745
1972	895	89.8	804
1973	938	96.5	905
1974	853	90.0	768
1975	894	89.8	803
1976	884	89.6	792
1977	838	90.5	758
1978	801	87.0	697
1979	802	87.7	703
1980	767	91.8	704
1981	824	89.7	739

Source: NAS/NRC Doctorate Record File

Table 11. Percentage of New Ph.D.s in Economics Seeking Work but with no Specific Employment Prospects at Receipt of Degree

	Percent
1969	10.3
1970	10.0
1971	11.0
1972	10.5
1973	11.7
1974	14.2
1975	13.4
1976	16.5
1977	16.2
1978	17.6
1979	14.7
1980	14.5
1981	12.3

Source: NAS/NRC Doctorate Record File

market for new economists, only perhaps softness in the academic sector.

Evidence that the distribution of new Ph.D.s among employment sectors is changing is presented in Table 12. While the majority of new graduates continues to accept academic appointments, over the 1970s the percentage doing so has been steadily shrinking, while the numbers employed by business and government have steadily increased. Table 12 shows that the proportion of doctoral recipients entering the educational sector dropped 12 percent between 1971 and 1981, while the share accepting employment in business increased 7 percent and in government by 6 percent.³

Finally, Table 13 presents starting salaries in constant 1972 dollars for new Ph.D.s in economics in academic and government employment.⁴ In both cases, real starting salaries for new Ph.D.s have declined between 1970 and 1982, by 12 percent for academics and 13 percent for government economists. Whether the decline in real academic salaries will reach 30 - 35 percent, as Hansen et al. have

3. Information on first employment of foreign students is collected but not published by NAS/NRC, and we did not have funds to pay for special computer tabulations.

4. We are indebted to Dr. Frank Boddy of the University of Minnesota for the academic salary data. Government salaries are those provided to GS12 employees, the normal starting grade for government economists with Ph.D.s. Both salary series were deflated to 1972 dollars by the implicit GNP price deflator.

Table 12: Employment Sector of New Economic Ph.D.s
New Ph.D. Recipients

	Educational Institutions	Business	Government	Nonprofit Institutions	Other
1967	67.3	4.4	7.4	3.0	8.0
1968	68.8	1.4	5.0	3.8	4.5
1969	64.8	7.1	9.3	3.7	5.0
1970	68.6	6.6	9.2	4.2	2.3
1971	68.0	4.0	11.0	3.1	4.6
1972	65.3	6.0	10.8	3.5	4.2
1973	64.9	7.0	12.3	5.3	7.0
1974	60.6	6.8	13.8	3.6	5.2
1975	60.3	6.5	15.2	2.8	4.4
1976	59.3	7.5	15.6	2.8	4.4
1977	57.5	9.2	16.7	2.6	3.9
1978	55.9	9.5	14.2	3.5	4.5
1979	53.7	11.7	14.5	3.2	5.6
1980	55.8	10.0	15.9	4.4	3.6
1981	55.7	11.2	14.9	4.2	3.6

Source: NAS/NRC Doctorate Record File

Table 13. Salaries Offered For Recently Graduated Ph.D. Economists
(Constant 1972 dollars)

	Academic Institutions	Government (GS12)
1970	13,334	15,519
1971	12,900	15,665
1972	12,713	15,866
1973	12,206	15,784
1974	11,741	15,225
1975	11,352	14,705
1976	11,401	14,674
1977	11,164	14,619
1978	10,942	14,584
1979	10,912	14,184
1980	11,139	13,928
1981	11,522	13,736
1982	11,696	13,546

Sources: Dr. Francis J. Boddy, "Annual Salary Survey of Economics Departments in the United States," and Department of Labor, Occupations of Federal White collar and Blue Collar Workers.

suggested,⁵ is unclear, especially considering the apparent rise in real academic salaries over the past two years. To date, however, the fall in real salaries does not appear to have caused the sharp drop-off in enrollments that those authors projected.

5. W.L. Hansen, et al., "Forecasting the Market for New Ph.D. Economists," op. cit.

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FIGURE 1

TOTAL ENROLLMENT IN GRADUATE ECONOMICS PROGRAMS, 1960-1981

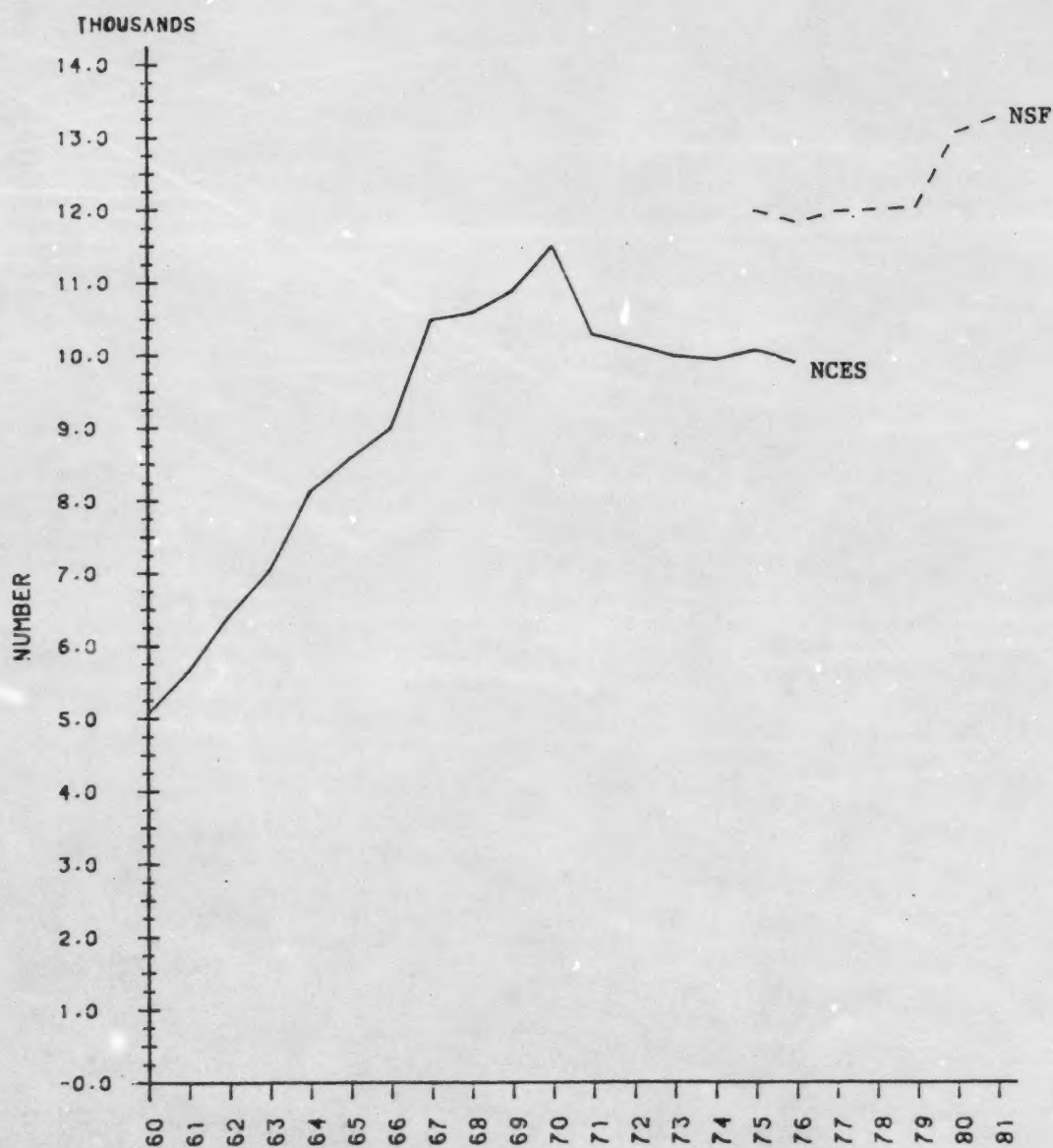


FIGURE 2

DISTRIBUTION OF GRADUATE ENROLLMENT BY SEX, 1970 - 1981

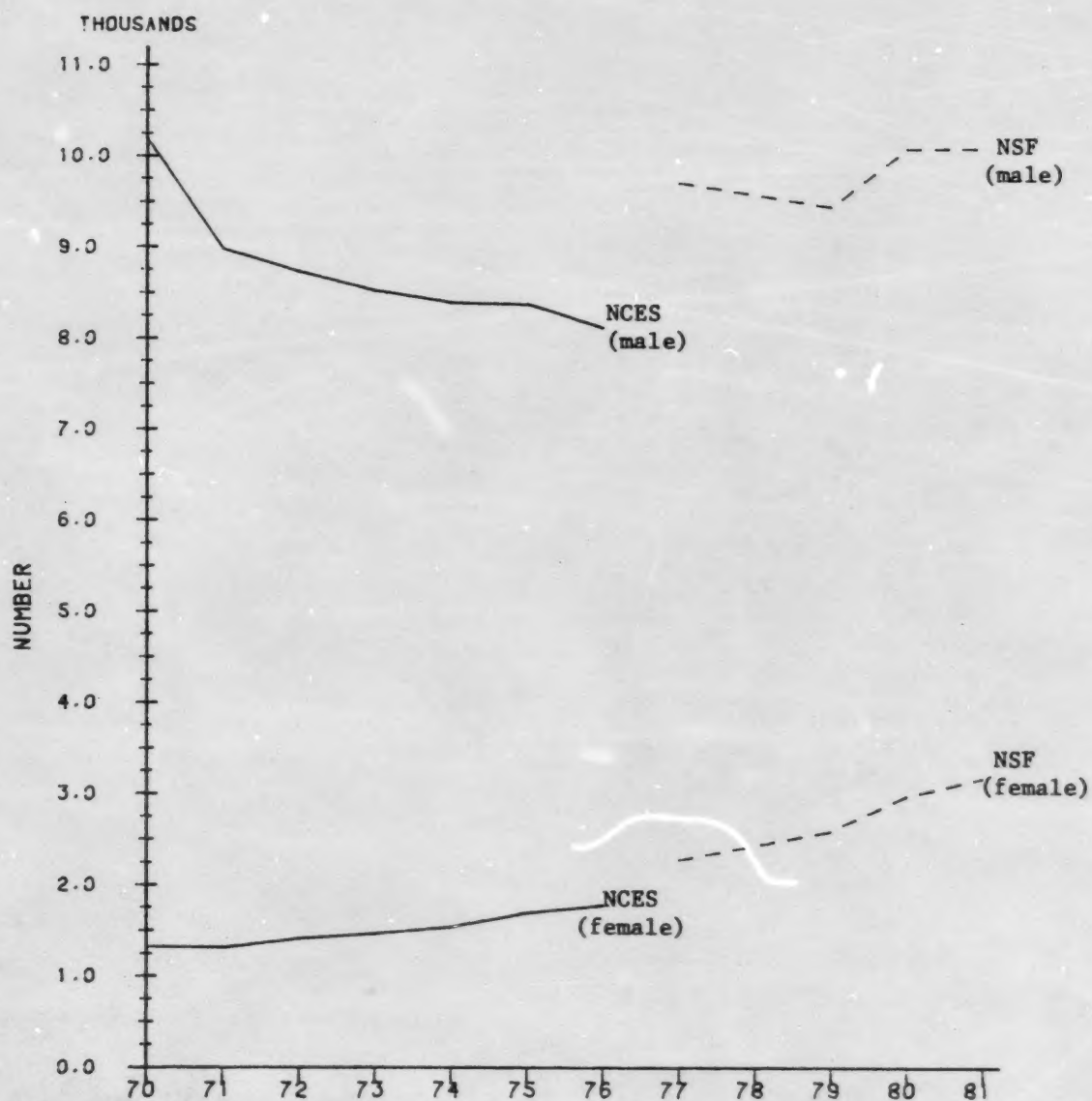


FIGURE 3

FOREIGN STUDENT ENROLLMENT IN GRADUATE ECONOMICS PROGRAMS

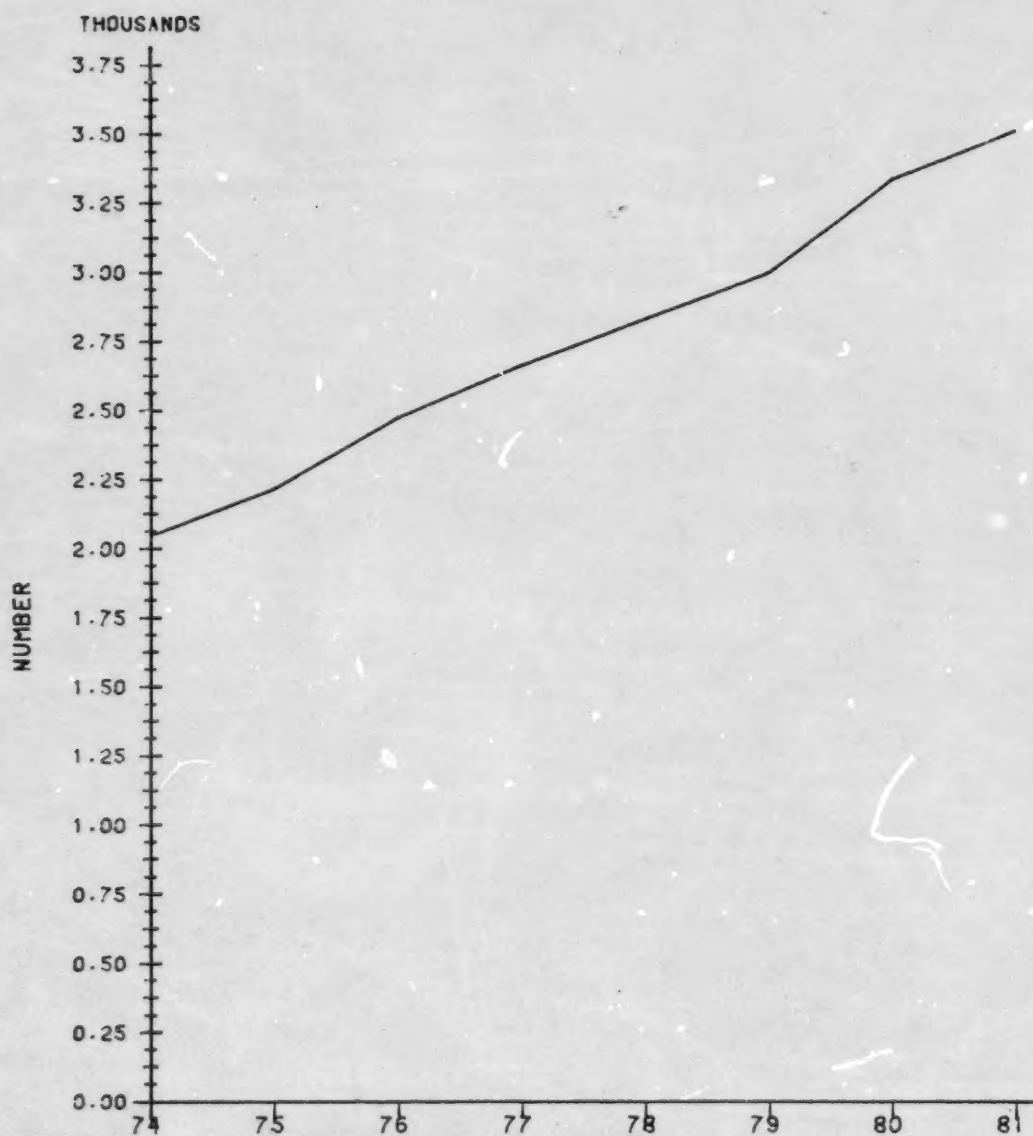


FIGURE 4

FIRST YEAR ENROLLMENT IN GRADUATE ECONOMICS PROGRAMS

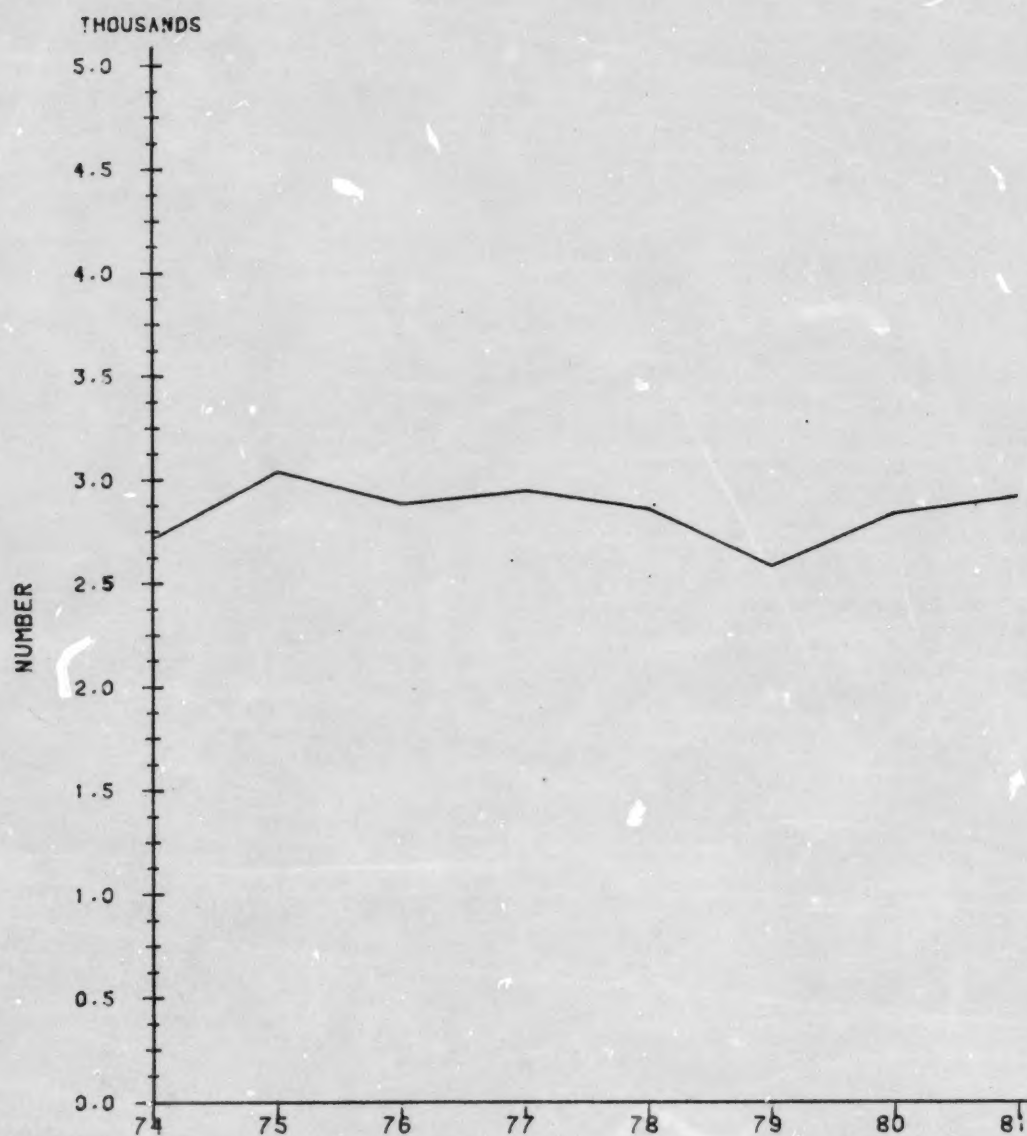


FIGURE 5

TYPE OF SUPPORT RECEIVED BY GRADUATE ECONOMICS STUDENTS

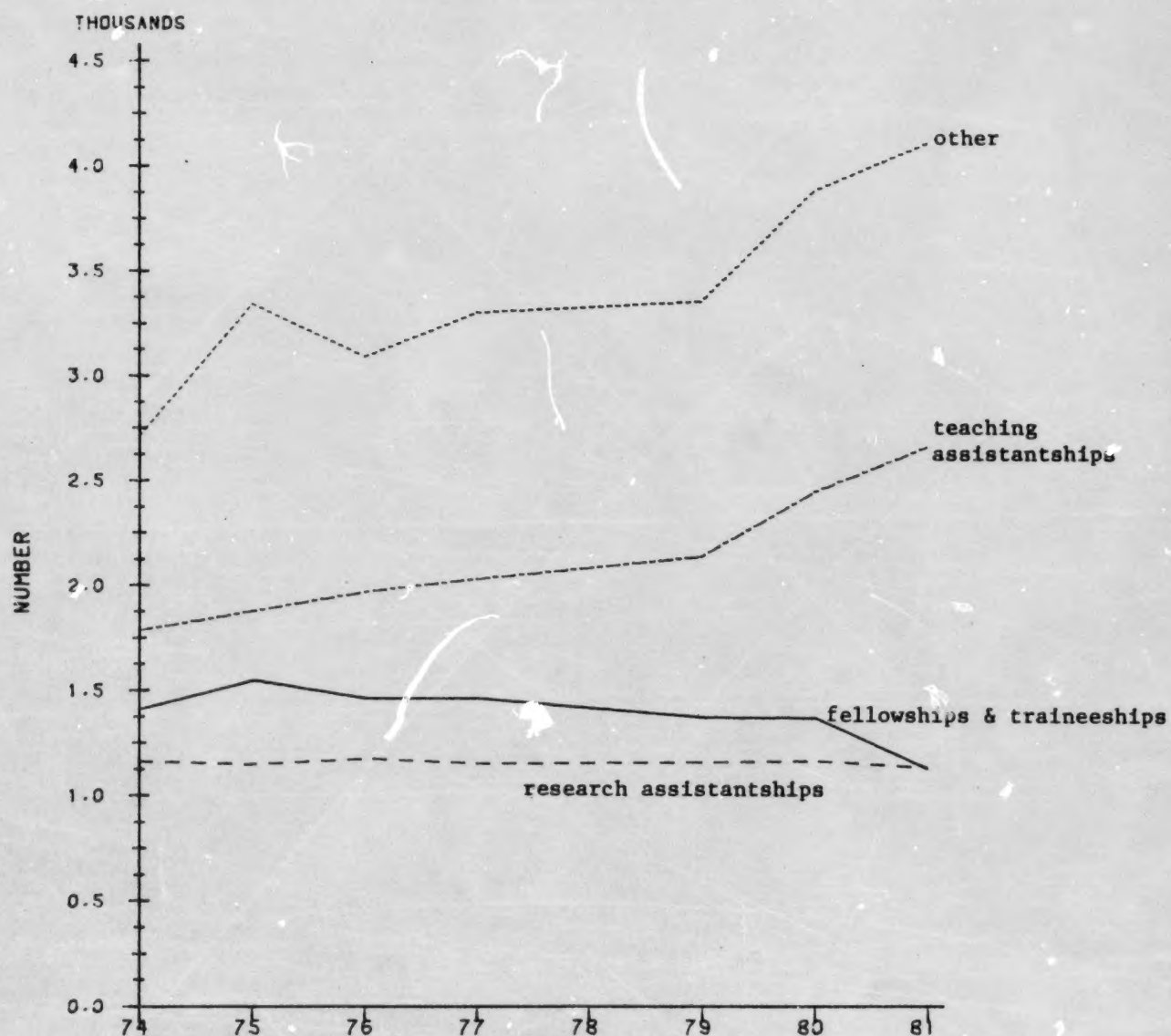


FIGURE 6

SOURCE OF SUPPORT RECEIVED BY GRADUATE ECONOMICS STUDENTS

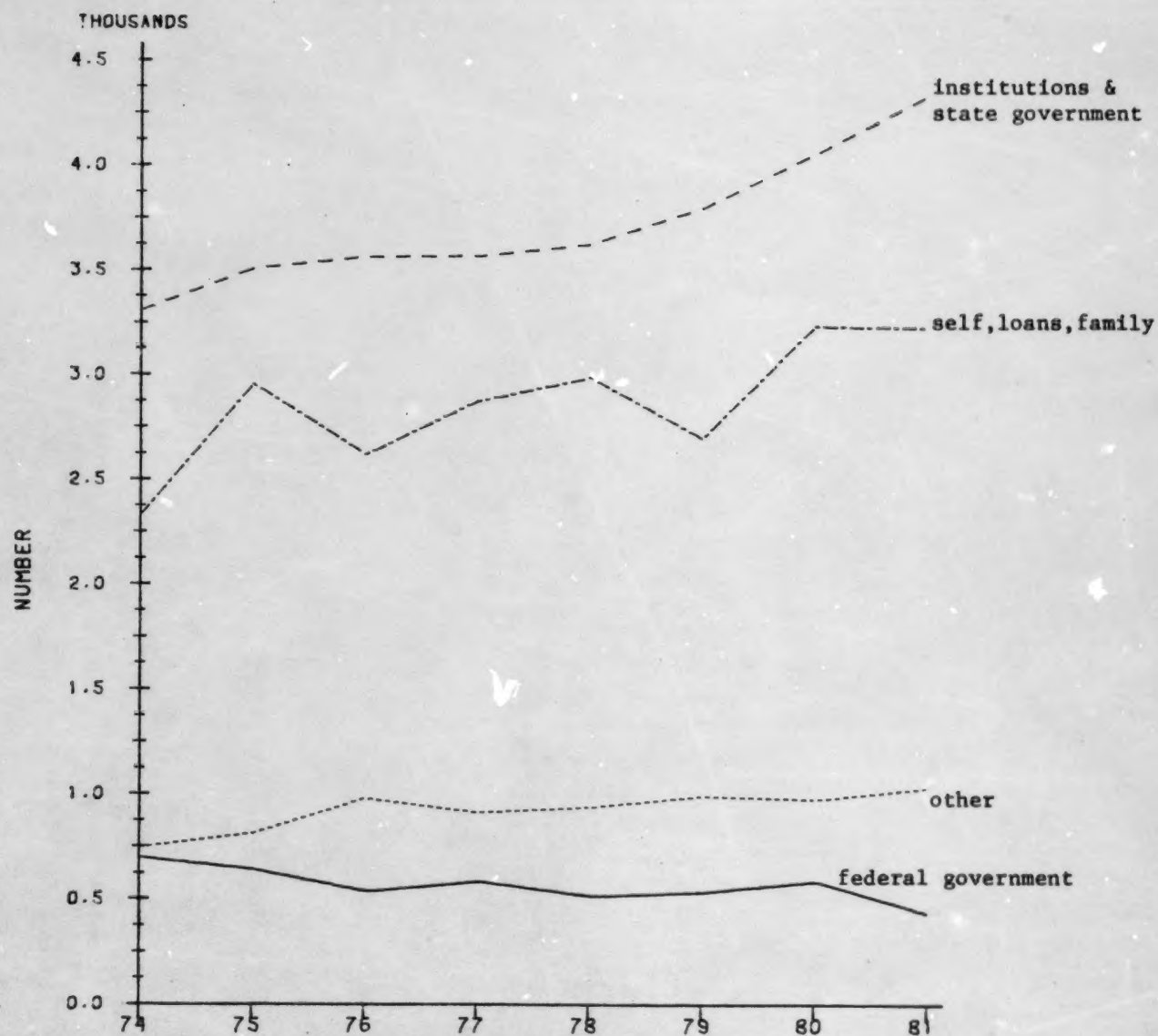


FIGURE 7A

NUMBER OF GRADUATE DEGREES CONFERRED IN ECONOMICS. 1960- 1981

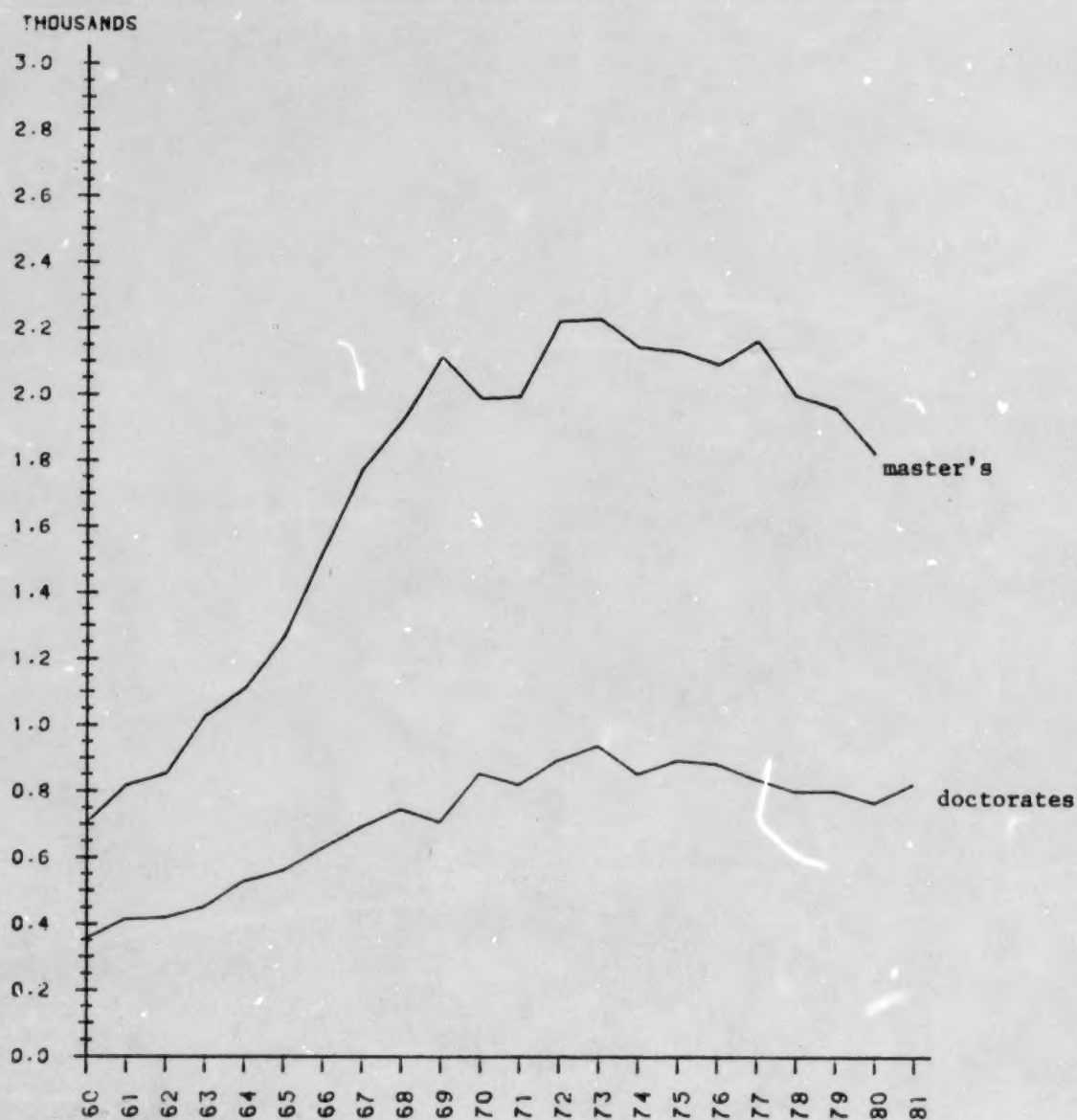


FIGURE 7B

SHARE OF ADVANCED ECONOMICS DEGREES AWARDED TO WOMEN

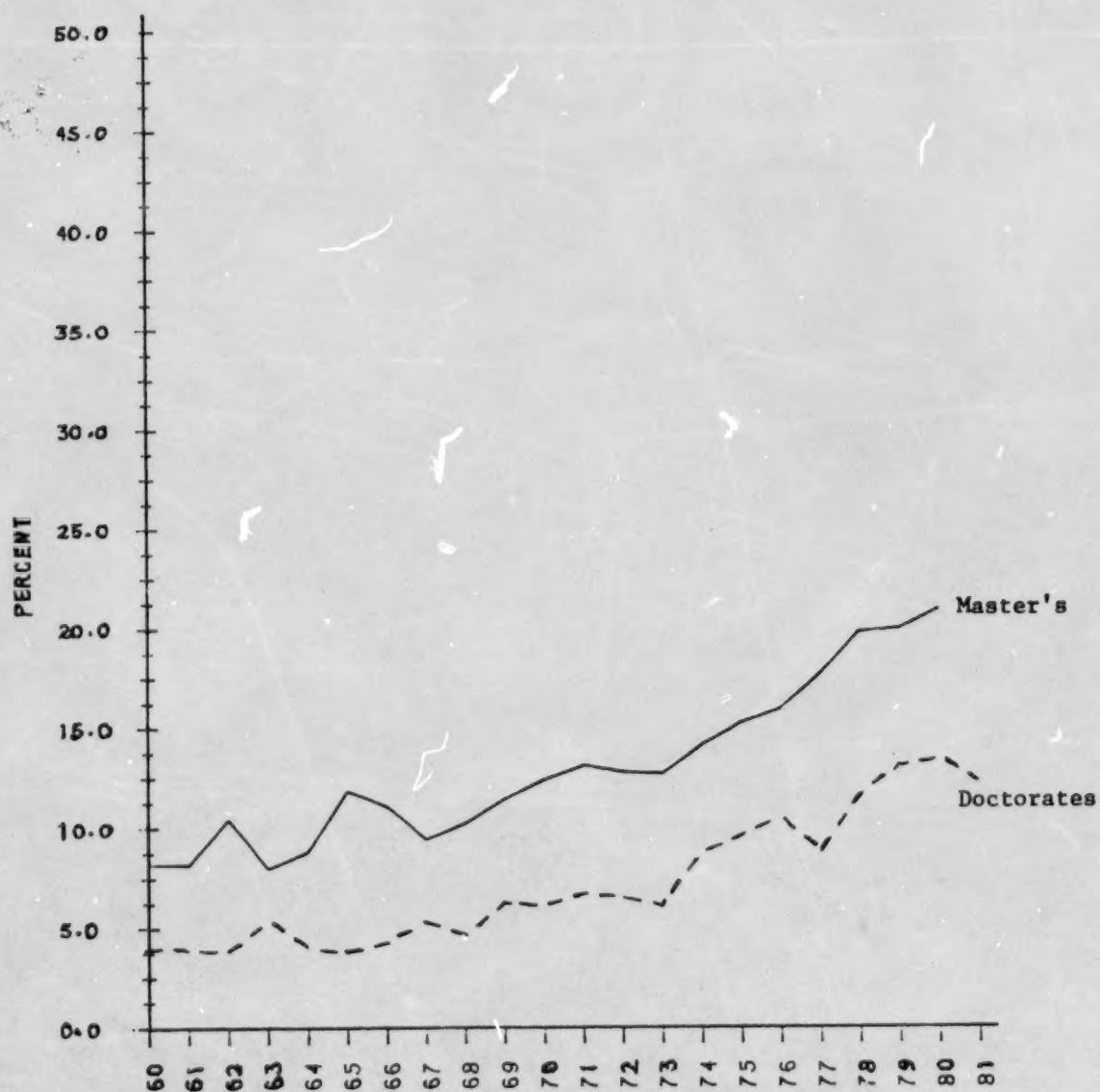


FIGURE 7C

DISTRIBUTION OF MASTER DEGREES BY SEX. 1960 - 1981

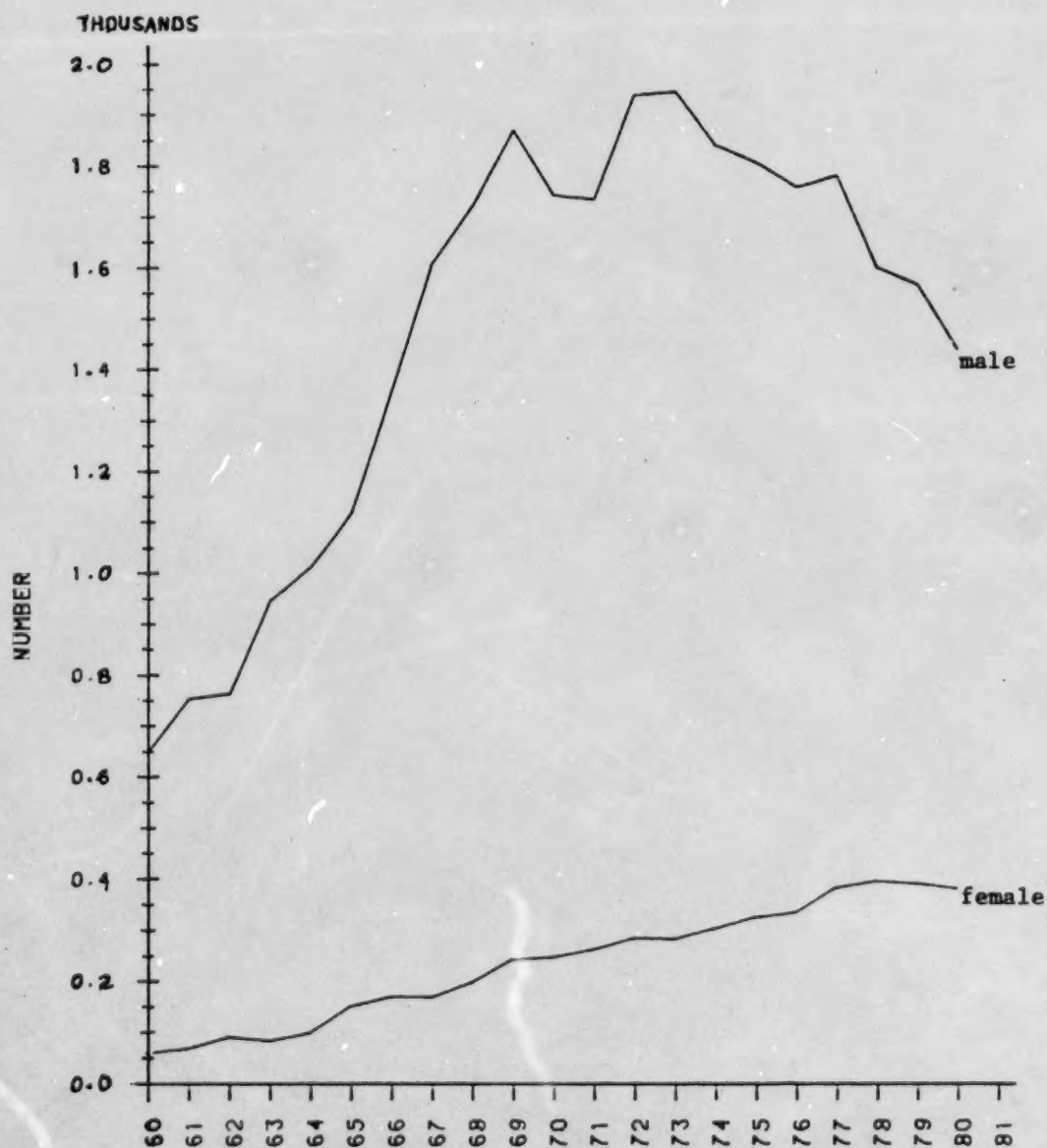


FIGURE 7D

DISTRIBUTION OF MASTER DEGREES BY SEX, 1960 - 1981

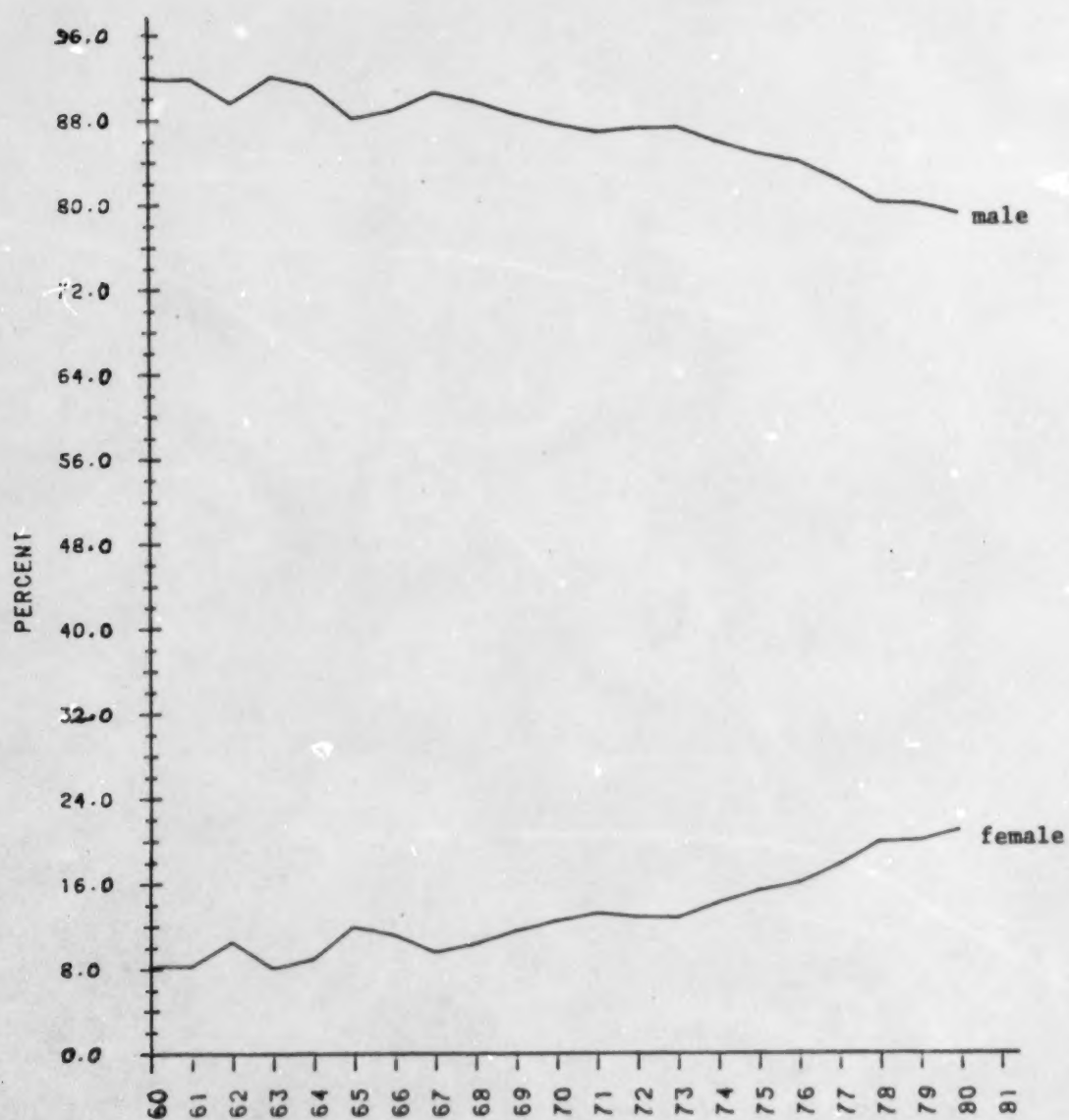


FIGURE 7E

DISTRIBUTION OF DOCTORAL DEGREES BY SEX, 1960 - 1981

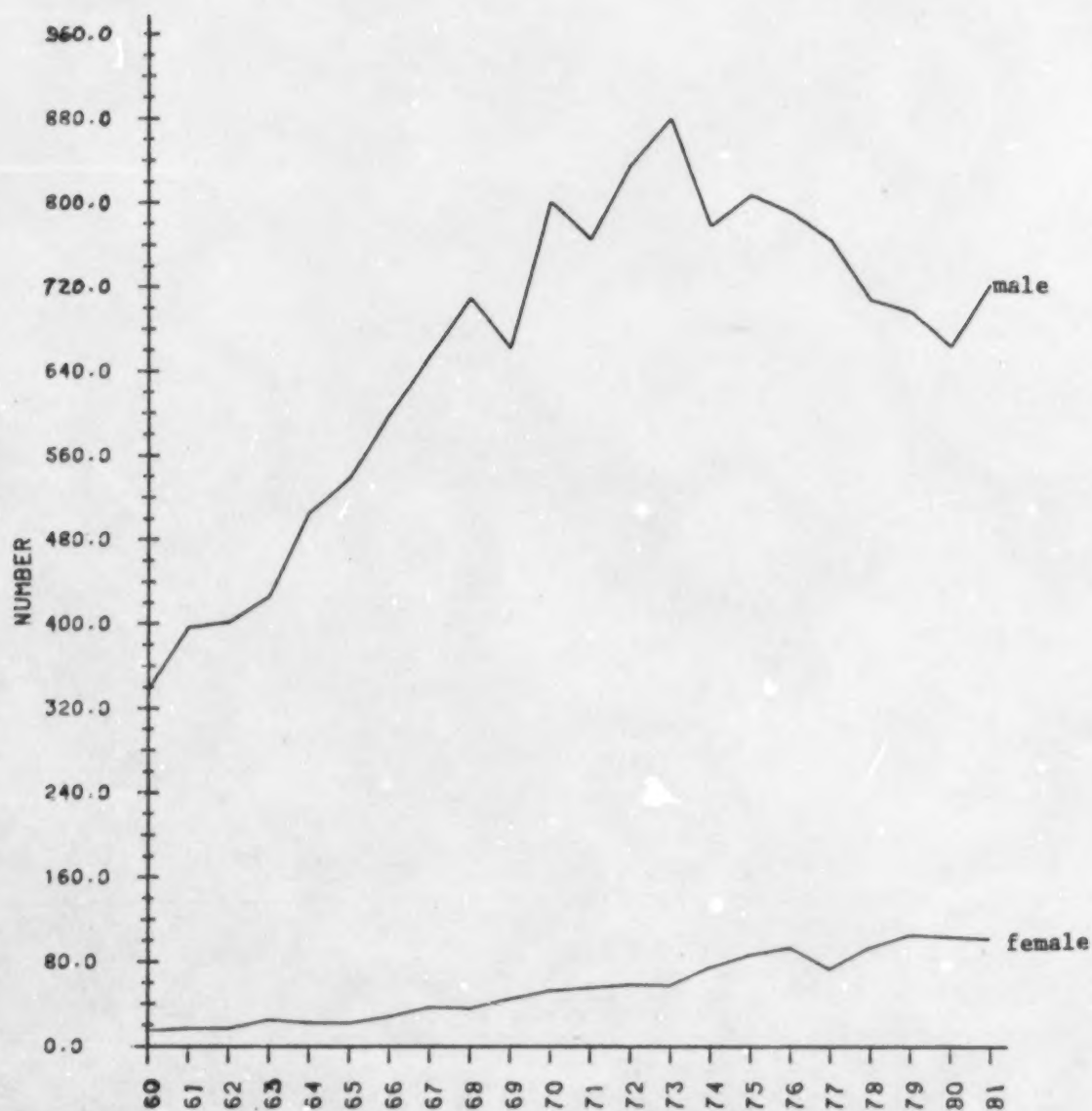


FIGURE 7F

DISTRIBUTION OF DOCTORAL DEGREES BY SEX, 1960 - 1981

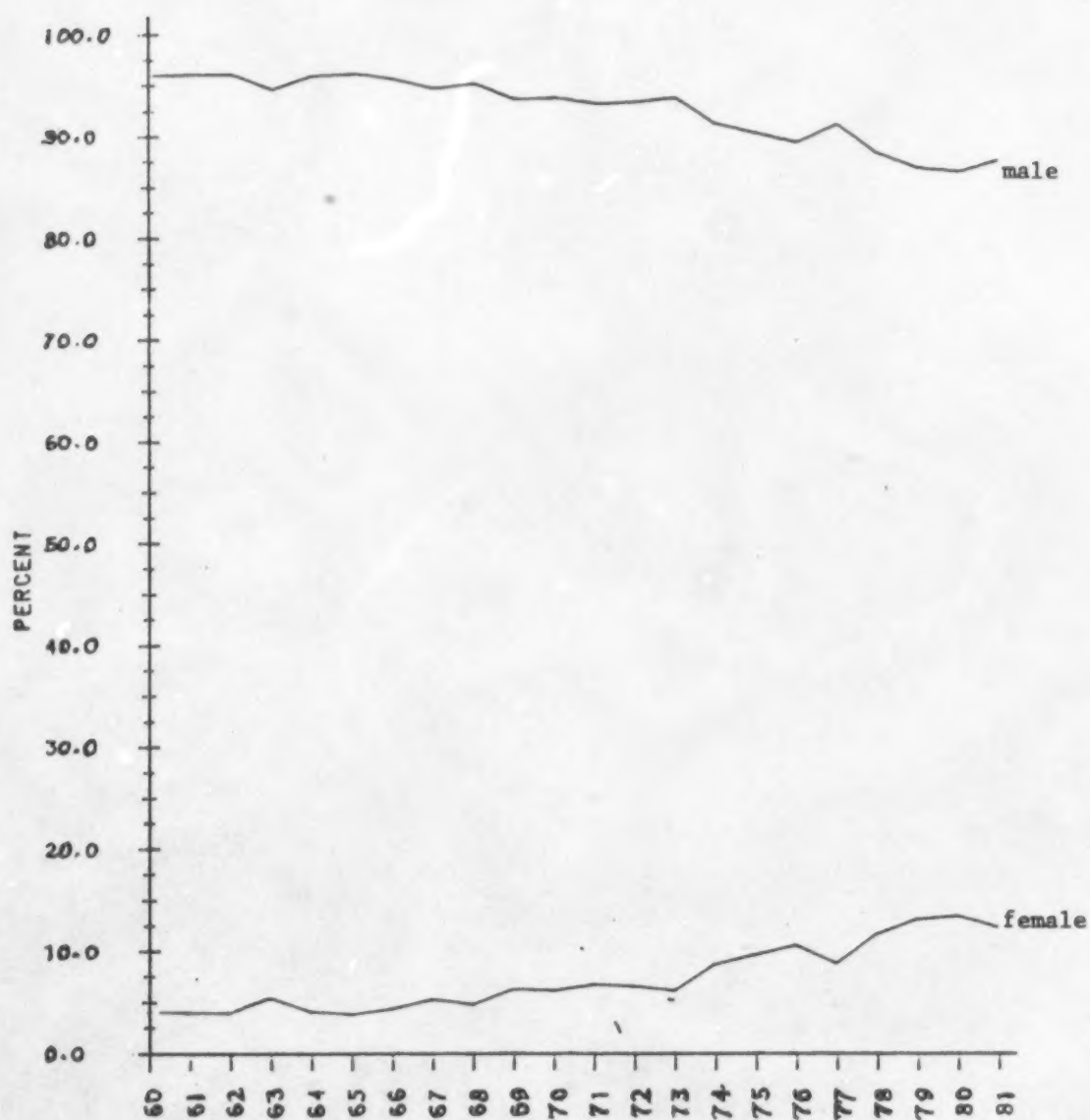


FIGURE 8

CITIZENSHIP OF ECONOMICS PH.D. RECIPIENTS, 1970 - 1981

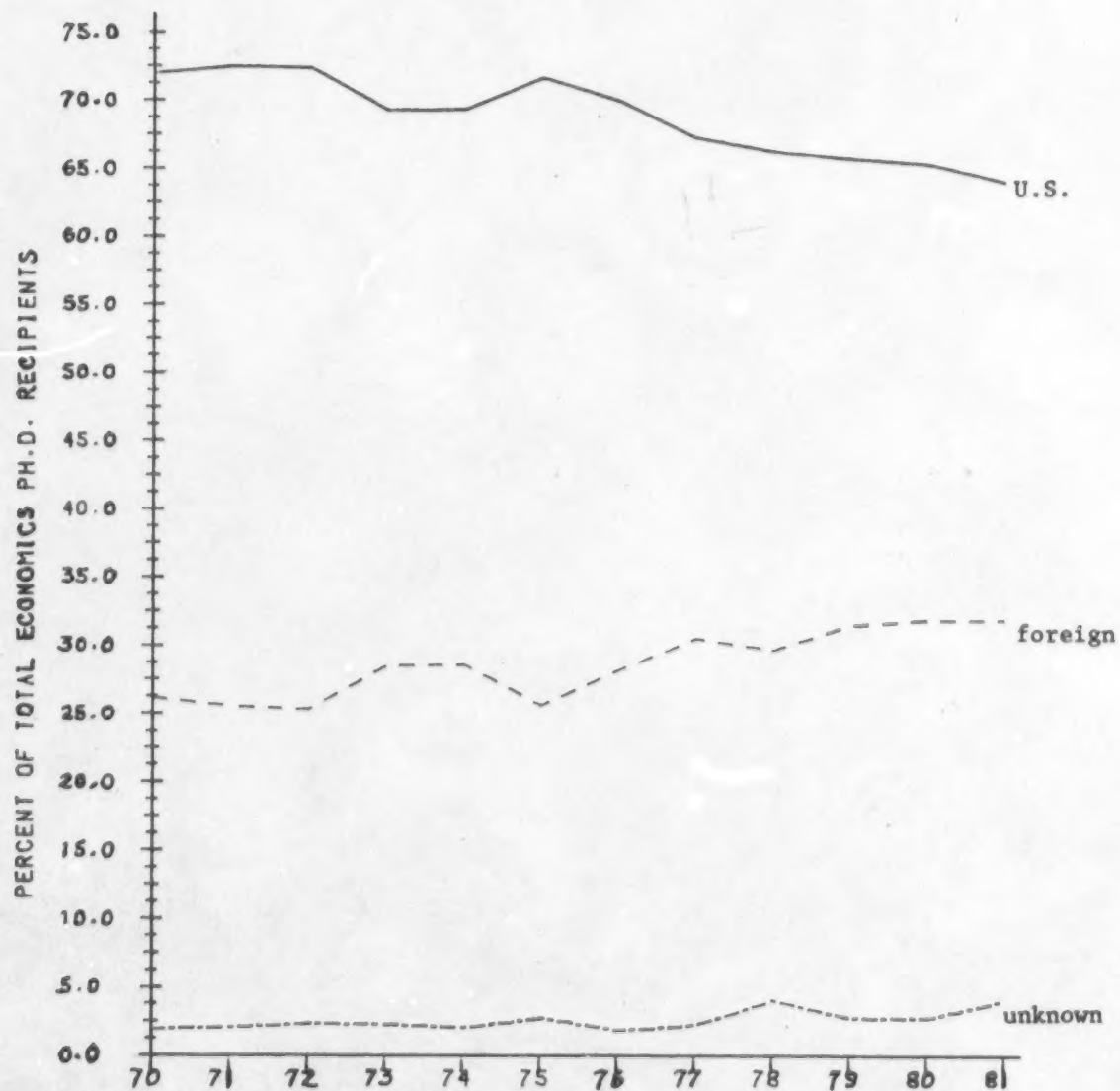


FIGURE 9

SHARE OF DOCTORATES IN ECONOMICS AWARDED TO MINORITY STUDENTS

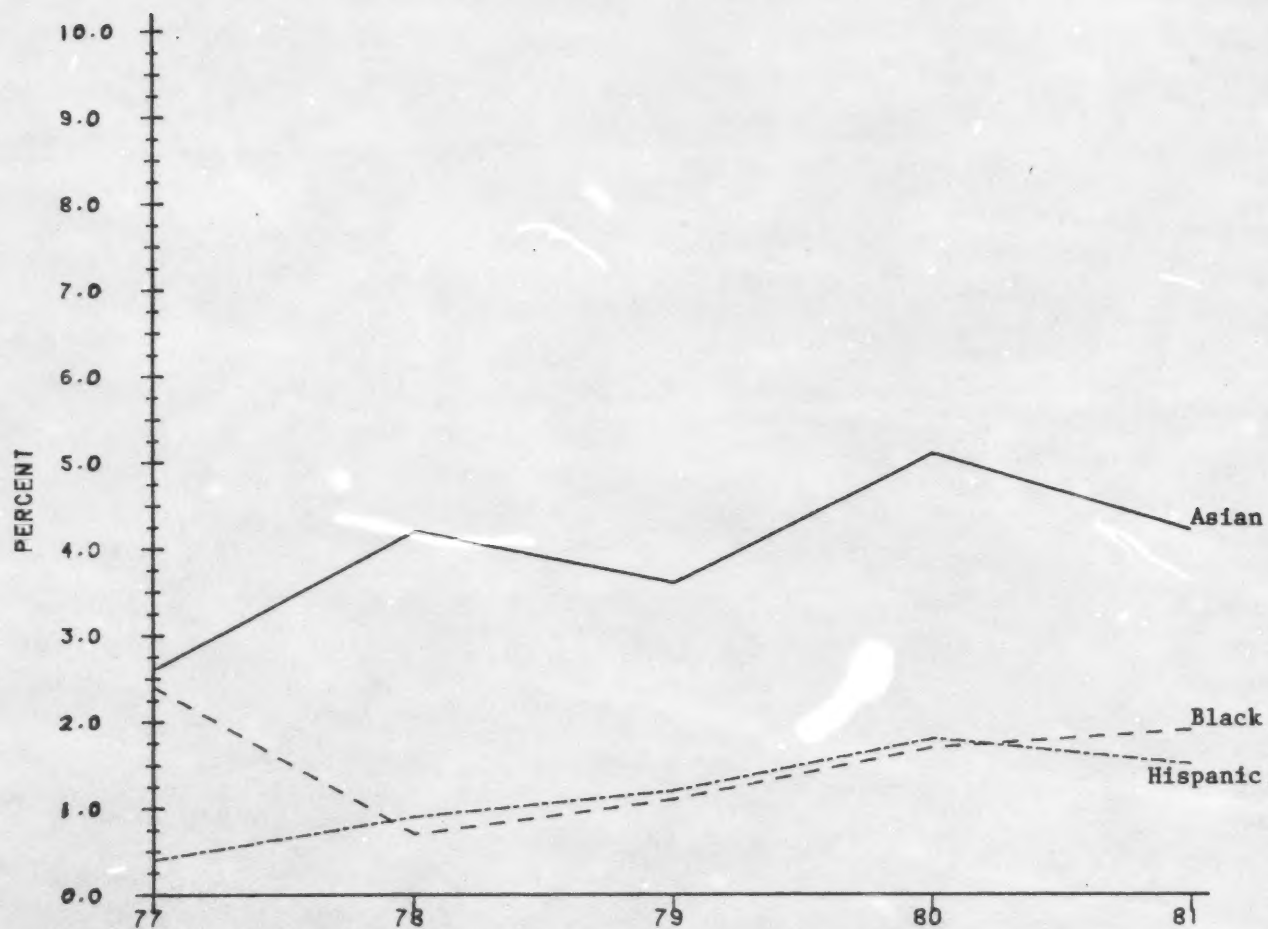


FIGURE 10

NUMBER OF RECENT PH.D. RECIPIENTS ENTERING THE LABOR MARKET

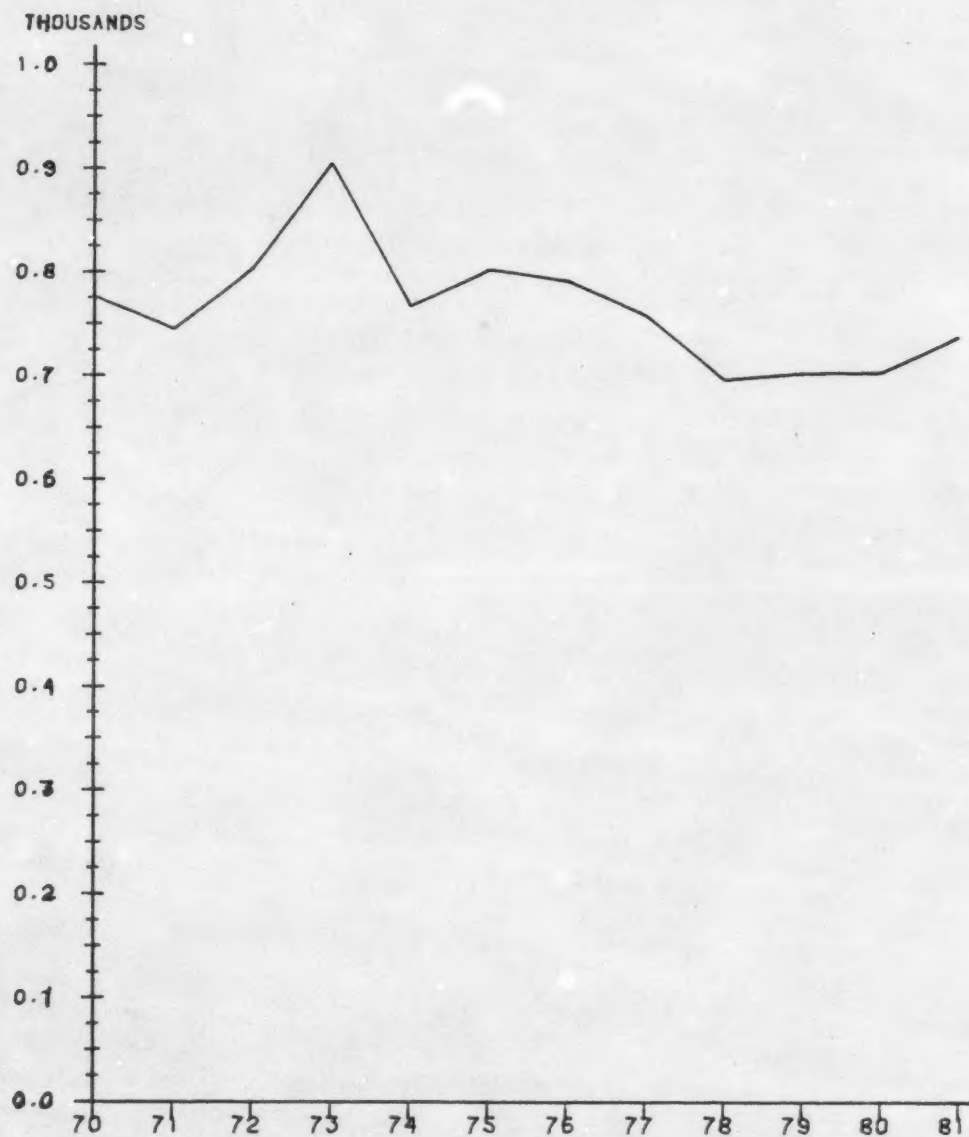


FIGURE 11

PERCENTAGE OF NEW P.H.D.s IN ECONOMICS SEEKING WORK BUT WITH NO
SPECIFIC EMPLOYMENT PROSPECTS AT RECEIPT OF DEGREE

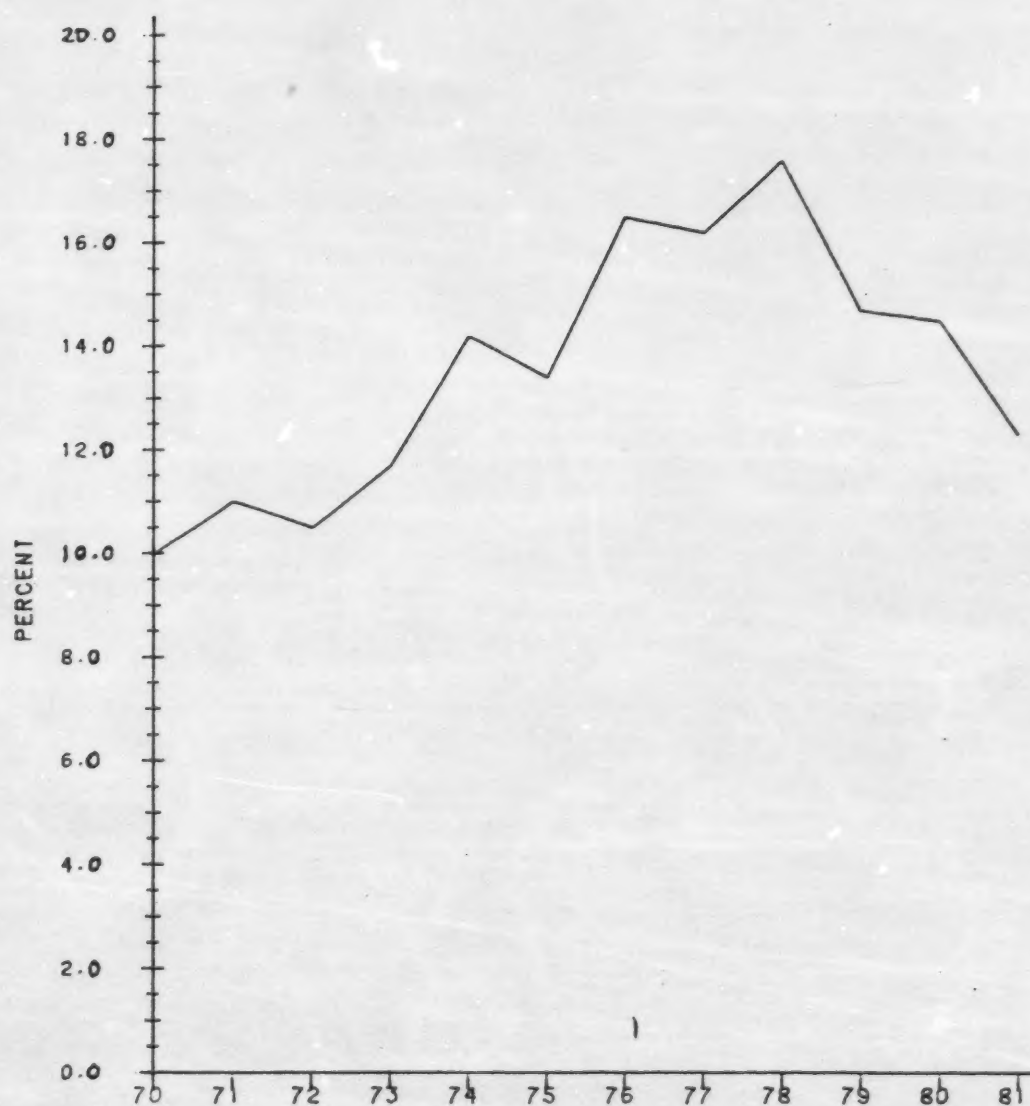


FIGURE 12

EMPLOYMENT SECTOR OF NEW PH.D. ECONOMISTS

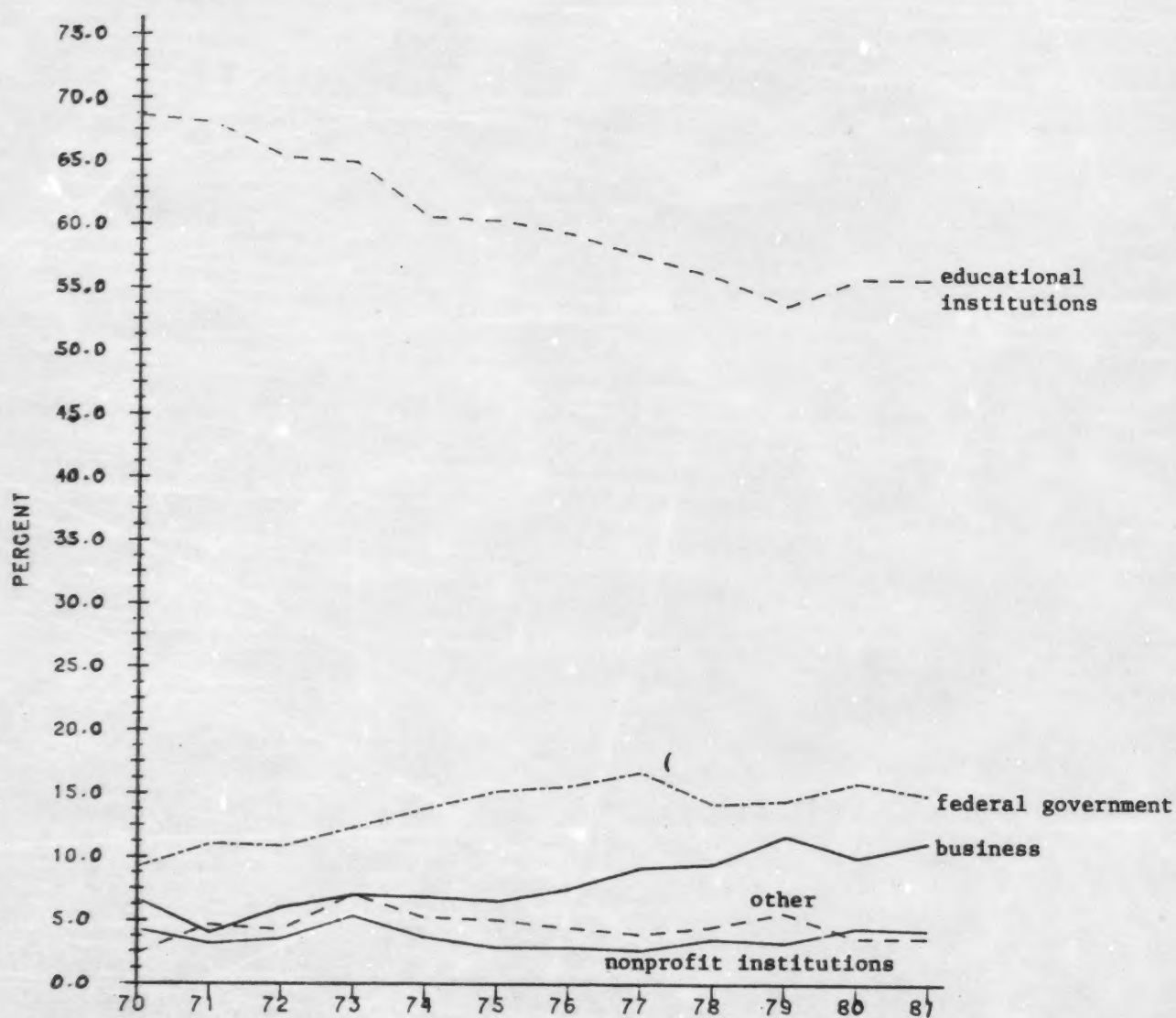


FIGURE 13

STARTING SALARIES FOR NEW PH.D. ECONOMISTS, 1970 - 1982

